

CONSOLIDATED INFORMATION TECHNOLOGY SERVICES TASK ASSIGNMENT (TA)

1. **TITLE:** (D318) Flight Deck Software Development

TA No:	RDE001-Rev13	
Task Area Monitor:	Alternate Task Area Monitor:	
NASA POC:	Software Control Class:	Low Control
Type of Task:	Non-Recurring Task	

2. **BACKGROUND**

The Integrated Intelligent Flight Deck Technologies project, under National Aeronautics and Space Administration (NASA) Aviation Safety Program, is comprised of a multi-disciplinary research effort to develop flight deck technologies that mitigate operator-, automation-, and environment-induced hazards. Towards this objective, crew/vehicle interface (CVI) technologies are being developed that reduce the propensity for and minimize the risks associated with pilot error to improve aircraft safety for current and future aircraft and which proactively overcome aircraft safety barriers that would otherwise constrain the full realization of the NextGen. Part of this research effort involves the use of Synthetic Vision (SV) and Enhanced Vision (EV) systems and other interface modalities as enabling technologies to meet these challenges, such as creating a visual flight environment for the crew, independent of the actual outside weather and visibility conditions, through application of EV/SV and associated technologies. This includes the application of EV/SV heritage to NASA Space Exploration challenges.

3. **OBJECTIVE**

The Contractor (ConITS) shall provide support to the IIFD/CVI element through development of terrain databases and corresponding 3D models necessary for the different IIFD/CVI project experiments; development of symbology for aircraft displays (primary flight display, head-up display, head-worn display and navigation display); development of interfaces between various software and systems; and supporting simulation operations. The Contractor shall develop software for supporting the IIFD/CVI experiments and shall provide improvements and enhancements to the software as requested by the researchers. The LaRC manager responsible for a particular project and the Contractor personnel assigned to that project shall work cooperatively and iteratively, as required, to ensure fulfillment of the mission/task objectives.

Under ConITS funding, software support and maintenance shall be provided to maintain and up-grade, as desirable, the Visual Imaging System for Transport Aircraft (VISTAS)-III facility. This work shall include on-demand operation and trouble-shooting of software, computers, and hardware interfaces to ensure that VISTAS-III can support IIFD/CVI research and demonstrations.

Under ConITS funding, software development shall be conducted to support IIFD/CVI research using Government-Supplied equipment to generate "stand-alone" synthetic vision capabilities. This work shall include algorithm development, architecture development, coding, software analysis and trouble-shooting, terrain database development, synthetic vision database development, data recording and event logging, communications, and flight symbology. This task shall also provide any ancillary support such as software licenses and maintenance agreements and procurement of database and other related products necessary to complete this task.

4. GENERAL IT SUPPORT SERVICES

Exceptions and Additional Requirements:

Where requirements for deliverables necessitate the procurement of either hardware or software, ConITS shall procure those items that are needed for the successful and timely completion of task activities. Additionally, ConITS shall complete travel and special-purpose training if needed for the successful and timely completion of task activities.

General IT Support Services Performance Metrics

Performance Standard: Documentation covering the use of application software covered by this requirement is complete, understandable, and up-to-date.

Performance Metrics:

- Exceeds: Documentation is error free, complete and up-to-date. Significant improvements have been made in the clarity of documentation or documentation is proactively sought from all sources.
- Meets: Documentation is complete with only minor errors noted
- Fails: One or more required documentation components are not available or errors are noted that could compromise the operation or integrity of the applications.

Performance Standard: The applications software to which these services apply is fully operational and kept up-to-date with no significant disruption in capability.

Performance Metrics:

- Exceeds: "Meets" and improvements are recommended and adopted; or users rate help in the use of applications very good to excellent.
- Meets: The inventory, including status, of application software is current and accurate. Upgrades are installed and fully operational within 5 days of receipt (or approval, if later) with no loss of data. Users rate operation and help in use of the applications satisfactory.
- Fails: Any of the requirements of this subsection (a through h) is not satisfied. Users rate operation and help in use of the applications less than satisfactory.

5. SYSTEM AND APPLICATION DEVELOPMENT SERVICES

Project Title: Flight Deck Architecture Modification

LaRC Software Manager:

Software Software Control Class: Low

Responsibilities of Contractor and LaRC personnel: The nature of the CVI experiments are highly dynamic in terms of software requirements in order to meet other goals of the experiment. As the software is one critical component to the success of an experiment, ConITS personnel shall work closely and proactively with the principal investigator (PI) to ensure the experiment objectives are met. Further, it is expected that negotiations will occur due to requirement changes and their impact on schedule. The PI is expected to notify ConITS of the requirement changes. ConITS shall be responsible for analyzing the changes and reporting to the PI the impact to schedule, delivery and the risk associated with the requirements change(s). ConITS shall maintain the software architecture with any modifications provided by NASA in a requirements package and/or the ConITS Action Request System (CARS). CARS shall be used to record all software changes. As major projects arise, the TA project lead shall create an appropriate CARS section devoted to that software development task. The TAM and Alternate TAM shall be notified of all changes made in the CARS associated with this TA.

Requirements:

Both formal and informal checkout sessions of the architecture modifications will be used as appropriate to ensure that the specified requirements have been met. Technical interchange meetings will be held as needed to ensure communication.

Constraints:

NASA will retain all software rights.

Acceptance Criteria:

The software will be tested in the appropriate facility to ensure the requirements for the experiment have been met. Acceptance of changes will be tracked via CARS.

6. WORK-AREA SPECIFIC SERVICES

Work Area Title: VISTAS III laboratory

LaRC Manager: Trey Arthur

Work Area Description: VISTAS III is a piloted workstation used for testing prototyping concepts for researchers. The facility is used to perform experiments, flight check out and rapid prototyping of concepts. The facility operates during first shift. Facility hardware consists of high end PCs and various human-machine interface devices.

Work Area Requirements: Any developed software should render in the VISTAS facility. The facility operates on its own dedicated network which can send aircraft state data via sockets. Personnel using VISTAS III will require card key access to the facility (as well as B1268D).

Work Area Title: LaRC Simulation Facilities

LaRC Manager:

Work Area Description: CVI conducts several experiments in the LaRC high fidelity simulators (AKA, IFD, RFD and GFD). These facilities are maintained by the Simulation Development and Analysis Branch (SDAB).

Work Area Requirements: Use of the LaRC simulators requires scheduling with the appropriate SDAB personnel. Any software development or checkout not requiring the PI shall be scheduled by ConITS as needed. Card key access is required for B1268D as well as the support lab, RSIL.

7. Exhibit A

None required.

8. SPECIAL SECURITY REQUIREMENTS

ConITS personnel needing access to the SDAB simulators shall obtain access to B1268D (card key). ConITS personnel requiring VISTAS III access shall obtain card key access to both B1268D and VISTAS III.

9. SOFTWARE ENGINEERING PROCESS REQUIREMENTS

ConITS shall employ the appropriate ISO processes consistent with NASA LaRC procedures. ConITS shall use the CARS to report detailed progress for tasks. The CARS shall be used to report action items and error reports.

10. JOINT REVIEW SCHEDULE

There will be a joint review of the tasks at meetings to be held as needed determined by the PI for each project. The attendees of the meeting shall be determined by the PI and ConITS lead for this task.

11. PERIOD OF PERFORMANCE

This TA is effective from 01/01/09 to 04/27/10

12. TECHNICAL PERFORMANCE RATING

The quality and timeliness will be equally considered for delivered software. It is important that the software be developed in the required time and sufficiently stable for conducting experiments.

Quality: 50% Timeliness: 50%

13. RESPONSE REQUIREMENTS

This Task Plan shall address the contractor's specific work plans, associated estimated labor

hours, cost and schedule.

14. FUNDING INFORMATION

Funding has not been entered for this TA.

15. MILESTONES

None required.

16. DELIVERABLES

Number	Deliverable Item	Deliverable Schedule
1	Development and Release Software	The schedule for each delivery is dependent on each defined experiment. The final software used in the experiment shall be delivered to the TAM. The delivery shall consist of a development setup (source code plus install instructions) and a release setup (executables, no source code and install instructions).

17. FILE ATTACHMENTS

None.